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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,349	02/26/2007	Luca Balconi	10184.0001	6919

22852 7590 11/30/2009

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EXAMINER	
THEODORE, MAGALI P	

ART UNIT	PAPER NUMBER
1791	

MAIL DATE	DELIVERY MODE
11/30/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/577,349	BALCONI ET AL.	
	Examiner	Art Unit	
	Magali P. Théodore	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 September 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *34-40,42 and 44-66* is/are pending in the application.

4a) Of the above claim(s) *52-66* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *34-40,42 and 44-51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/10/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's amendment filed July 17, 2009 was received.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

Claims 34-38, 41-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Belli et al.** WO 0247092, in view of **Matthies et al.** US Patent 6,220,224 and **Moe et al.** US 2004/0011193 A1.

Regarding **claims 34**, **36**, **37** and **45**, Belli et al. discloses a process for producing a cable having at least one thermoplastic coating layer (Abstract) where a dielectric liquid is injected into a molten thermoplastic polymer in an extruder (pg 8 lines 18-23). Referring to Figure 2, the dielectric liquid is fed into a pump 26 which pumps the liquid via outlet lines 29 to a feed device 90 consisting of three separate injectors (pg 24 lines 14-25). The pump 26 comprises plural pumping heads 26' or pumping units. The presence of a valve 32 on each outlet line 29 ensures that the liquid is fed into the feed device 90 at the correct working pressure (page 24 lines 31-34).

Belli et al. does not disclose feeding the liquid to a plurality of storage tanks in fluid communication with the injectors. Matthies et al. disclose a fuel-injection system for an internal combustion engine (Abstract) where fuel is fed from one or more high-pressure pumps 6 to a common inflow pipe 1 from which high pressure lines 2 branch off leading to individual high pressure storage devices 3 from which high pressure lines

4 continue to the fuel injectors 5 (Column 4 lines 26-37). Note that the high pressure storage devices 3 constitute storage tanks. Matthies et al. further disclose the use of high pressure storage devices as advantageously eliminating the need for additional elements such as return valves (Column 2 lines 40-48). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the storage devices in Matthies et al. in Belli et al.'s process. The rationale to combine is based on the teaching of Matthies et al. that to do so predictably results in a liquid injection process that eliminates the need for return valves (Column 2 lines 40-48).

While Matthies et al. teaches that each high pressure storage device 3 or storage tank is in fluid communication with just a single feed line 2, in Belli et al.'s original invention, the processing unit 17 is in fluid communication three pumping units 26' via three outlet or feed lines 29. When modifying Belli et al.'s invention with Matthies et al.'s teaching as described above, one of ordinary skill in the art would have been faced with the question of whether to conserve Belli et al.'s arrangement of three outlet or feed lines' converging to a single destination or to adopt Matthies et al.'s arrangement of one feed line per storage tank. The rationale for having keeping three feed lines per destination is provided by Moe et al.: Moe et al. teach that having three pistons or pump units operating out of phase with each other is better than having a single piston or pump unit because, with the so-called triplex pump, the fluid flow is continuous and fluctuates less (paragraph 0008). Before modification in view of Matthies et al., Belli et al. has that advantage because the three pumping heads or pump units 26' lead into three feed lines 29 that converge into the same destination. If each of those feed lines

29' were to lead to a separate storage tank, the advantage of continuous flow taught by Moe et al. would be lost. The most obvious way to have both the advantages of continuous flow as taught by Moe et al. and the aforementioned advantages from the storage tanks taught by Matthies et al. is to have plural feed lines leading to each storage tank. Therefore, it would have been obvious to one of ordinary skill in the art to have plural feed lines from plural pumping units feed into each storage tank in the method taught by Belli et al. and modified in view of Matthies et al. in order to assure continuous flow while eliminating the need for additional elements such as return valves.

Regarding **claim 35**, Belli et al. in view of Matthies et al. and Moe et al. disclose all limitations of claim 34 (see above). Belli et al. further disclose a weight ratio between the dielectric liquid and thermoplastic polymer of between 1:99 and 25:75 (pg 17 lines 7-9).

Regarding **claim 38**, Belli et al. in view of Matthies et al. and Moe et al. disclose all limitations of claim 34 (see above). Belli et al. further disclose use of a thermoplastic material comprising a polyolefin (pg 11 lines 13-15).

Regarding **claims 41**,**42** and **44**, Belli et al. in view of Matthies et al. and Moe et al. disclose all limitations of claim 34 (see above). Belli et al. further disclose the feeding of dielectric liquid into a membrane pump 26 actuated by a motor means 27 (pg 24 lines 13-16). The pump 26 has three separate pumping heads 26" each with a separate outlet line 29 for pumping liquid dielectric towards feed device 90 consisting of three separate injectors (pg 24 lines 17-25). Note that a membrane pump constitutes a

reciprocating positive- displacement pump. Also note that the injection process disclosed by Belli et al. is mechanical in nature.

Regarding **claim 43**, Belli et al. in view of Matthies et al. and Moe et al. disclose all limitations of claim 34 (see above). Belli et al. in view of Matthies et al. and Moe et al. do not disclose feeding the liquid to each storage tank through at least one pair of liquid feeding lines. However, one of ordinary skill in the art at the time the invention was made would have found it obvious to include two liquid feeding lines since it has been held that "mere duplication of parts has no patentable significance unless a new and unexpected result is produced" (In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960)). The use of an additional liquid feeding line through which to feed liquid to each storage tank is unpatentable because the duplication of the feeding line does not produce a new and unexpected result.

Regarding **claim 46**, Belli et al. in view of Matthies et al. and Moe et al. disclose all limitations of claims 34 and 45 (see above). Belli et al. further disclose the use of at least one pair of injectors for injecting and distributing the dielectric liquid as homogenously as possible in the molten polymer material (pg 20 lines 27-33).

Regarding **claim 47**, Belli et al. in view of Matthies et al. and Moe et al. disclose all limitations of claims 34 and 45 (see above). Belli et al. further disclose a process for producing an electrical cable which has at least one coating layer made of a thermoplastic polymer material comprising: extruding a thermoplastic material comprising at least one thermoplastic polymer and at least one dielectric liquid and

depositing and shaping the thermoplastic material around a conductor belonging to a cable (Abstract).

Regarding **claim 48**, Belli et al. in view of Matthies et al. and Moe et al. disclose all limitations of claims 34, 45 and 47 (see above). Belli et al. further disclose a device 90 comprising three separate injectors located 120° away from each other on the same cross section of the extruder 10 (pg 20 line 34 through pg 21 line 2).

Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Belli et al.** WO 0247092, in view of **Matthies et al.** US Patent 6,220,224 and **Moe et al.** US 2004/0011193 A1, as applied to claims 34-38 & 41-48 above, and further in view of **Boysen** US Patent 3,968,463.

Regarding **claim 39**, Belli et al. in view of Matthies et al. and Moe et al. disclose all limitations of claim 34 (see above). Belli et al. in view of Matthies et al. and Moe et al. do not disclose the pressure of the molten mass in the range of about 10 bar to about 1400 bar. Boysen discloses a process of extruding ethylene or propylene polymer onto the core conductor of coaxial cable in order to provide a dielectric layer having good mechanical and electrical properties (column 2 lines 27-31). The process makes use of an ethylene or propylene based expandable composition (column 5 lines 10-21). When the expandable composition is moved from the inlet end 11 of the extruder towards the exhaust end 12 of well 6, the pressure within the extruder builds to a maximum of about 600 to 10,000 psig and then tapers off to about 600 to 7,000 psig (Figure 2, column 7 line 67 through column 8 line 7). Boysen further discloses that the

level of pressure within the well of the extruder will vary depending on the intended diameter of the dielectric coating (column 8 lines 8-12). For dielectrics with outer diameters ranging from 5/16 to 1 and 7/8 inches, the maximum pressure levels will range from 600 to 3,000 psig tapering off to about 600 to 2,000 psig (column 8 lines 12-16). For small diameter dielectrics having a diameter of about 0.004 inches, the maximum pressure will range up to about 10,000 psig tapering off to about 7,000 psig (column 8 lines 16- 20). Note that the pressure range of 600 to 10,000 psig corresponds to a pressure range of about 41 bar to about 689 bar. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a range of pressure of molten polymer from 600 to 10,000 psig as taught by Boysen in Belli et al.'s process. The rationale for combining is based on the teaching of Boysen that to do so predictably results in pressure levels useful for producing dielectric coatings a various diameters (column 8 lines 8-20).

Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Belli et al.** WO 0247092, in view of **Matthies et al.** US Patent 6,220,224 and **Moe et al.** US 2004/0011193 A1, as applied to claims 34-39 & 41-48 above, and further in view of **Wilkenloh** US Patent 4,107,354.

Regarding **claim 40**, Belli et al. in view of Matthies et al. and Moe et al. disclose all limitations of claim 34 (see above). Belli et al. in view of Matthies et al. and Moe et al. do not disclose a predetermined pressure of 30-1500 bar to which the liquid is brought and at which it is injected. Wilkenloh discloses a method of coating a conductor with an

extruded cellular polyolefin base composition which has been rendered cellular by the direct injection of a liquid blowing agent during the extrusion process (Abstract). Referring to column 9 lines 1-35, a high pressure pump 37 builds up the pressure of the liquid blowing agent to about 6,000 psig after which the blowing agent is discharged through supply line 61. A high pressure pump controller 36 allows a constant predetermined pressure to be achieved. At the point of injection, the pressure of the liquid blowing agent is higher than the pressure of the molten polymer inside the extruder which is typically between 1,000 to 4,000 psig. Thus the injection pressure of the liquid blowing agent must be between 1,000 psig and 6,000 psig which corresponds to a pressure range of about 69 to 414 bar.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to bring a liquid to a predetermined pressure of 6,000 psig and inject the liquid into molten polymer inside an extruder at a pressure range of 1,000 to 6,000 psig as taught by Wilkenloh in Belli et al.'s process. The rationale for combining is based on the teaching of Wilkenloh that to do so predictably results in the ability to inject the liquid into a molten polymer inside an extruder by overcoming the pressure of the molten polymer inside the extruder (column 9 lines 29-32).

Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Belli et al.** WO 0247092, in view of **Matthies et al.** US Patent 6,220,224 and **Moe et al.** US 2004/0011193 A1, as applied to claims 34-48 above, and further in view of **Pierick et al.** US Patent 6,884,823.

Regarding **claim 49**, Belli et al. in view of Matthies et al. and Moe et al. disclose all limitations of claims 34, 45 and 47 (see above). Belli et al. in view of Matthies et al. and Moe et al. do not disclose a plurality of injection points longitudinally staggered by a predetermined distance. Pierick et al. disclose molding systems and methods useful for making microcellular foamed materials (Abstract). Referring to Figure 1 (column 18 line 61 through column 19 line 35), a molding system 30 is provided with a plurality of blowing agent inlets or injection ports 54, 55, 57, 59, and 61 arranged axially along barrel 32. Each injection port includes a mechanical shut-off valve 154, 155, 157, 159, and 161 which allow the flow of blowing agent into extruder barrel 38 to be controlled as a function of axial position of the reciprocating screw 38 within the barrel. This allows the injection blowing agent at a position along the screw that remains essentially constant resulting in consistent mixing independent of the position of the screw.
At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use injection ports axially arranged along a barrel of a screw extruder as taught by Pierick et al. in Belli et al.'s process. The rationale for combining is based on the teaching of Pierick et al. that to do so predictably results in the ability to control injection into the extruder as a function of axial position of the screw allowing the injection to occur at a position along the screw that remains essentially constant resulting in consistent mixing independent of the position of the screw (column 19 lines 1-30).

Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Belli et al.** WO 0247092, in view of **Matthies et al.** US Patent 6,220,224 and **Moe et al.** US 2004/0011193 A1, as applied to claims 34-49 above, and further in view of **Dawson et al.** US Patent 4,961,845.

Regarding **claim 50**, Belli et al. in view of Matthies et al. and Moe et al. disclose all limitations of claims 34 (see above). Belli et al. in view of Matthies et al. and Moe et al. do not disclose a preliminary step of filtering the liquid.

Dawson et al. disclose an apparatus and method for filtering particulate matter from dielectric fluids as a way of maintaining and monitoring the purity of the fluids (Abstract). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the method of filtering a dielectric liquid as taught by Dawson et al. in Belli et al.'s process. The rationale for combining is based on the teaching of Dawson et al. that to do so predictably results in a way of maintaining and monitoring the purity of the dielectric fluids (Abstract). Also note that filtering a liquid prior to feeding it into a molten mass would be an obvious way of reducing the impurities/particulate matter in the liquid such that the liquid being fed into the molten mass is rendered more pure and does not clog the feeding mechanism or contaminate the molten mass.

Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Belli et al.** WO 0247092, in view of **Matthies et al.** US Patent 6,220,224 and **Moe et al.** US 2004/0011193 A1, as applied to claims 34-50 above, and further in view of **Austin** US Patent 4,877,568.

Regarding **claim 51**, Belli et al. in view of Matthies et al. and Moe et al. disclose all limitations of claims 34 (see above). Belli et al. in view of Matthies et al. and Moe et al. do not disclose maintaining the liquid at a predetermined temperature. Austin discloses a method for incorporating an additive, particularly a lubricant, into an extruded polymeric article (column 2 lines 49-51). Referring to Figure 1, a molten additive is injected through a central axial longitudinal passageway 15 connected to a generally lateral passageway 16 that empties at the root 17 of a screw flight of an extruder 9 (column 2 lines 49-61). Austin discloses that the additive must be in liquid form, preferably molten, so as to be pumpable through a small passageway such as 15 or 16 (column 3 lines 1-3). Austin further discloses that the additive must generally be heated to keep it molten as it passes through passageway 15 or 16 (column 3 lines 38-40). In the case where the additive is a lubricant being introduced into unmelted granules, the lubricant should heated to a temperature of about 80°C (column 3 lines 17-24). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the method of heating an additive to a predetermined temperature prior to injecting into an extruder as taught by Austin in Belli et al.'s process. The rationale for combining is based on the teaching of Austin that to do so predictably results in a way of keeping an additive in liquid or molten form so that it is pumpable through the passageways leading into the extruder (column 3 lines 1-3 & 38-40).

Response to Arguments

Applicant's arguments with respect to claim 34 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Magali P. Théodore whose telephone number is (571) 270-3960. The examiner can normally be reached on Monday through Friday 9:00 a.m. to 6:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina A. Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Magali P. Théodore/
Examiner, Art Unit 1791

/Christina Johnson/
Supervisory Patent Examiner, Art Unit 1791